

NATIONAL SCIENCE FOUNDATION

Instructions for Reporting Data on Obligations for
Scientific Research and Development at Non-Profit Institutions

General

To obtain useful quantitative data on Federal scientific research and development programs, the Bureau of the Budget compiled for fiscal years 1948, 1949 and 1950 statistical information on the amount of funds obligated by Federal agencies for these programs at colleges and universities. Because of the Foundation's statutory responsibilities and its general interest in the field, the Bureau has requested that it undertake compilation of this information. To increase its usefulness, a number of changes have been made in the scope of the report and in the classifications previously used.

Scope of the Information Requested

Information is requested for obligations incurred by Federal agencies in fiscal years 1951 and 1952 for scientific research and development at non-profit institutions. Further explanations of the data desired are as follows:

- (1) The data requested is limited to research and development in the sciences. The subject matter comprising the classifications to be used in reporting the information is defined more fully in the section on "Definition of Terms" below.
- (2) "Scientific research and development" is intended broadly to include, not only the actual conduct of research and development, but also obligations incurred for: (a) indirect costs of non-profit institutions related to their conduct of research and development; (b) operating and maintenance costs of research and development facilities, installations, or activities owned, used or managed by non-profit institutions, even though no actual research or development may be sponsored at the facility or installation by the agency involved; (c) increases in the capital research and development plant of non-profit institutions; and (d) arrangements under which funds will be distributed by a non-profit institution to other organizations or individuals for research and development. It is not intended to include obligations for activities concerned primarily with the dissemination of scientific information or with the training of scientific manpower.

(1)

- (3) All obligations which will result in payments to a non-profit institution, as defined below, should be reported regardless of the nature or location of the institution.
- (4) The figures reported for 1951 should be actual obligations. Those for 1952 should be obligations actually incurred through the latest date for which such information is available plus estimated obligations for the remainder of the fiscal year.
- (5) All obligations for scientific research and development at non-profit institutions incurred in the fiscal year being reported on should be reported regardless of whether the obligation is charged against funds appropriated specifically for research and development and regardless of when the funds were appropriated or otherwise received or when they have or will be expended.
- (6) Finally, obligations incurred by one agency but charged to funds transferred from another agency should be reported by the agency responsible for the arrangements with the institution.

Reporting Forms

Sample forms on which the obligations are to be reported are attached.

The first of these forms, "Table I, Scientific Research and Development at Non-profit Institutions, Obligations by Scientific Fields" provides for a tabulation, in summary form, of the information requested by broad scientific fields and the nature of the activity for which the obligation is incurred. Obligations charged to transferred funds should be included in this table opposite the appropriate field classification and also in memo (non-add) form opposite the caption "Obligations Included Above Charged to Transferred Funds (Non-Add)".

The second form, "Table II, Scientific Research and Development at Non-Profit Institutions, Obligations by Institutions", provides for a detailed listing of the obligations incurred at individual institutions with a tabulation by scientific field. Institutions should be listed alphabetically by state or country.

For both forms a separate report should be submitted for each major subdivision of the reporting agency. For Table II, separate reports are also required for each of the two fiscal years being reported on.

Definition of Terms

Obligations. The concept of "obligations" set forth in Budget-Treasury Regulation 1 (Revised) should be followed. Where an agency accounts for operations on an accrued or applied cost basis, the information may be stated in terms of such accrued or applied costs rather than obligations. Transactions modifying existing arrangements which result in increases in obligations, such as task orders, contract amendments, work orders, etc., should be included, as well as basic agreements. Reductions of obligations originally incurred in one of the years being reported on should be included by adjustment of the original obligation; reductions of obligations originally incurred in previous years should not be reported.

Non-Profit institution. For this report, "non-profit institution" means (1) any private organization, no part of the net earnings of which inures to the benefit of any private shareholder or individual, and any other private organization organized for the exclusive purpose of turning over its entire net earnings to such an organization; (2) any state, local or foreign government, or agency or instrumentality thereof. Agencies or instrumentalities of the Federal Government are excluded.

Typical examples of non-profit institutions are universities, research institutes, research foundations, experiment stations, hospitals, libraries, museums, observatories, and corporations organized specifically to do scientific research and development for the Federal Government on a non-profit basis.

Agency subdivision. By "subdivision" is meant any major organizational unit of the reporting agency such as a bureau, office or service.

Research and development classifications. For this report, data is requested by three categories, "basic research", "applied research", and "development". Simple, brief definitions of each of these general classifications are given below. In presenting these definitions it is recognized that simple definitions for items such as these are exceedingly difficult to formulate in such a way as to be acceptable to the scientist and to the administrator. The general concept of basic research in particular has often been subdivided into a number of additional categories such as background and fundamental, directed and undirected, programmatic and nonprogrammatic, etc., in order to distinguish between what sometimes appear as widely differing types of activity, or to characterize the motivation behind the work. Similar difficulties have been experienced with applied research and development. However, in a report of this nature, covering

an extensive body of facts developed from a large number of sources, it appears desirable to keep the categories as few, and their definitions as simple, as possible. Admittedly, there is often no clear-cut line of demarcation between categories such as these. Nevertheless, it is evident that very many cases, certainly the majority, may be classified with little difficulty. Thus the names of the categories themselves have a general validity as definitions.

In cases where uncertainty exists with respect to the proper classifications, the advice of research scientists representative of the field or fields concerned is of value. In cases where an overlap between categories exists, the obligation with its associated activity should be assigned to the category most appropriate to the principal emphasis of the undertaking, unless there is a logical basis for subdividing the work among different classifications.

As a general statement, "research" may be said to be systematic, intensive study directed toward fuller knowledge of the subject studied. For proper prosecution it requires highly trained personnel and special techniques.

- (1) "Basic research" is that type of research which is directed toward the increase of knowledge in science.
- (2) "Applied research" is that type of research which is directed toward practical applications of science.
- (3) "Development" is the systematic use of scientific knowledge directed toward the production of useful materials, devices, systems, methods or processes; the term excludes design and production engineering.

Increase of R&D Plant. Under this heading should be reported all obligations incurred for the purpose of providing, whether by construction, purchase or otherwise, physical facilities such as land, buildings or equipment, to be used by a non-profit institution on a permanent or semi-permanent basis for scientific research and development where the primary intent of the transaction is to enlarge the capital plant available to the institution. Obligations for all such facilities should be included regardless of whether or not title is vested in the Government.

Scientific fields. In addition to the classification by the nature of the activity, it is also requested that the data be classified according to scientific fields. Short definitions of the field classifications to be used are given below. As in

the case of the classification by type of research, it is recognized that many specific undertakings can be classified only with difficulty and will tend to overlap other fields. Again, it is suggested that, where classification difficulties arise, the opinion of representative research scientists be sought, and, that where overlap exists, the obligation be assigned to the category most appropriate to the principal emphasis, unless a logical basis for subdividing the work is present.

- (1) "Biological, Medical and Agricultural Sciences": Generically speaking, the biological sciences are those sciences dealing with life processes. For this report, the biological sciences as a whole are divided into
 - (a) "medical sciences", i.e., those sciences which, apart from the clinical aspects of professional medicine, are concerned primarily with the utilization of scientific principles in understanding diseases and in maintaining and improving health; (b) the "agricultural sciences", i.e., those sciences directed primarily toward understanding and improving agricultural productivity such as agronomy, animal husbandry, forestry, horticulture, range management, soil culture, etc.; and (c) "biological sciences", all sciences other than those listed in (a) and (b) above which deal with life processes. In addition to work done in disciplines traditionally considered as being a biological science there should also be included work done in other disciplines or subjects where the work is undertaken primarily for the purpose of understanding life processes.
- (2) "Physical, Mathematical and Engineering Sciencesphysical sciences" are those sciences concerned primarily with the understanding of the natural phenomena associated with non-living things; (b) "mathematical sciences" are those sciences which employ logical reasoning with the aid of symbols and which are concerned with the development of methods of operations employing such symbols. For this report, the mathematical sciences include: mathematics, pure and applied; astronomy; theoretical mechanics; statistics; logistic research; and computer research exclusive of engineering; (c) "engineering sciences" are those sciences which are concerned with studies directed toward making specific scientific principles usable in engineering practice.
- (3) "Social sciences" are those sciences directed toward an understanding of the behavior of individuals as members of a group. These include such sciences as cultural anthropology, economics, education, history,

logistics, political science, social psychology, sociology, etc. In addition to work done in disciplines or subjects traditionally considered as being a social science, there should also be included work done in other disciplines or subjects where the work is undertaken primarily for the purpose of understanding group behavior.

Submittal

It is requested that the completed forms be returned to the National Science Foundation, Washington 25, D. C., not later than August 8, 1952.

Members of the Foundation staff will be happy to assist in the preparation of the requested information by interpreting these instructions. Any questions or requests for assistance should be addressed to Mr. Charles Gant of the Foundation's staff (DU 7625; Gov't Code 1224).

It is also requested that in transmitting the information each agency designate a representative with whom any question concerning the report may be discussed.

TABLE I
SCIENTIFIC RESEARCH AND DEVELOPMENT AT NON-PROFIT INSTITUTIONS
OBLIGATIONS BY SCIENTIFIC FIELDS
(Thousands of Dollars)

Agency	Subdivision	FY 1951			FY 1952		
		Scientific Field	Basic Research	Applied Research	Development	Increase of R&D Plant	
	Biological, medical and agricultural sciences						
	Physical, mathematical and engineering sciences						
	Social sciences						
	Obligations included above charged to transferred funds (non-add)						
	Total						
	Biological, medical and agricultural sciences						
	Physical, mathematical and engineering sciences						
	Social sciences						
	Obligations included above charged to transferred funds (non-add)						
	Total						

TABLE II
SCIENTIFIC RESEARCH AND DEVELOPMENT AT NON-PROFIT INSTITUTIONS
OBLIGATIONS BY INSTITUTIONS
(Thousands of Dollars)